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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/683,642	01/29/2002	Albert Nazipovich Shigapov	200-1206 DP	6273

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EXAMINER

TRAN, DIEM T

ART UNIT	PAPER NUMBER
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3748

DATE MAILED: 01/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/683,642

Applicant(s)

SHIGAPOV ET AL. *cle*

Examiner

Diem Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 and 22-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 22-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

This office action is in response to the amendment filed on 10/28/03.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

***Claims 1, 2, 3, 8, 10, 15, 17, 22-24, 25, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manson (US Patent 6,248,689) in view of Kim (US Patent Application Publication US 2003/0104932).***

Regarding claims 1, 10, 17, 22, 24, 25, 28, Manson discloses a diesel exhaust gas treatment system comprising:

an oxidation catalyst (170) positioned in an exhaust gas passage of a diesel engine for converting at least a portion of NO contained in said exhaust gas to NO<sub>2</sub>; said oxidation catalyst comprising platinum (see col. 7, lines 30-34); and a particulate filter for receiving said exhaust gas (174) (see Figure 4, col. 7, lines 41-44), however, fails to disclose that said oxidation catalyst comprises a support material being zirconia-silica, having strong acid sites and said oxidation catalyst activity is at a temperature between about 175°C to 250°C. Kim teaches that it is conventional in the art, to utilize an oxidation catalyst comprising a support material being zirconia-silica, having strong

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acid sites (see page 2, parts [0023], [0024], page 3, part [0031]), and oxidation catalyst activity being at a temperature between about 200°C to 350°C (see page 6, part [0097]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Kim in the Manson system, since the use thereof would have improved the activity of the oxidation catalyst.

Regarding claim 2, Manson further discloses that said oxidation catalyst is positioned between said exhaust passage and said particulate filter (see Figure 4).

Regarding claim 3, Manson further discloses that said oxidation catalyst is combined with said particulate filter (see abstract, lines 1-9).

Regarding claims 8, 15, Kim further teaches that said support includes WO<sub>3</sub> (see page 2, part [0024], page 3, parts [0031], [0034]).

Regarding claim 23, Kim further teaches that the oxidation of particulate occurs at a temperature less than about 300°C (see page 6, part [0097]).

***Claims 4, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manson (US Patent 6,248,689) in view of Kim (US Patent Application Publication US 2003/0104932) as applied to claims 1, 10 above, and further in view of Murachi et al. (US Patent 5,746,989).***

Regarding claims 4, 18, the modified Manson system discloses all the claimed limitations as discussed in claims 1, 10 above; however, fails to disclose that a second catalyst positioned downstream from said particulate filter. Murachi teaches that it is

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conventional in the art, to utilize a second catalyst (9) positioned downstream from said particulate filter (7) (see Figure 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the second catalyst positioned downstream from said particulate filter as taught by Murachi in the modified Manson system, since the use thereof would have improved the efficiency of the emission control system.

***Claims 5, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manson (US Patent 6,248,689) in view of Kim (US Patent Application Publication US 2003/0104932) as applied to claims 4, 18 above, and further in view of Andreasson et al. (WO 99/39809).***

The modified Manson system discloses all the claimed limitations as discussed in claims 4,18 above; however, fails to disclose that a SCR is positioned downstream of the particulate filter. Andreasson teaches that it is conventional in the art, to utilize a SCR being positioned downstream of the particulate filter (see page 1, lines 22-25).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized a SCR positioned downstream of the particulate filter as taught by Andreasson in the modified Manson system, for more efficiently reducing the nitrogen oxides generated during the regeneration of the particulate filter.

***Claim 6, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manson (US Patent 6,248,689) in view of Kim (US Patent Application Publication***

***US 2003/0104932) as applied to claims 1, 10 above, and further in view of Khair et al. (US Patent 6,293,096).***

The modified Manson system discloses all the claimed limitations as discussed in claims 1, 10 above; however, fails to disclose a NOx trap positioned downstream from said oxidation catalyst. Khair teaches that it is conventional in the art, to utilize a NOx trap (22) (see Figure 1) positioned downstream from said oxidation catalyst.

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized a NOx trap positioned downstream from said oxidation catalyst as taught by Khair in the modified Manson system, since the use thereof would have improved the efficiency for the emission control system by reducing the NOx emitted from the exhaust pipe.

***Claim 7, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manson (US Patent 6,248,689) in view of Kim (US Patent Application Publication US 2003/0104932) as applied to claims 1, 10 above, and further in view of design choice.***

Regarding claims 7, 11, the modified Manson system discloses all the claimed limitations as discussed in claims 1, 10 above; however, fails to disclose that said oxidation catalyst comprises from about 1 to 5 wt. % platinum on a support containing from about 3 to 20 wt. % zirconia, and the balance silica.

Regarding the composition range of the oxidation catalyst, it is the examiner's position that a composition range being 1-5%wt. platinum and 3-20 %wt. zirconia and

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the balance silica would have been an obvious matter of design choice well within the level of ordinary skill in the art, depending on variables such as catalyst structure and target gases to purify, etc. Moreover, there is nothing in the record which establishes that the claimed parameters present a novel or unexpected result (See *In re Kuhle*, 562 F. 2d 553, 188 USPQ 7 (CCPA 1975)).

***Claims 9, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manson (US Patent 6,248,689) in view of Kim (US Patent Application Publication US 2003/0104932) as applied to claims 1, 10 above, and further in view of Yoshimoto et al. (JP 02-056250).***

Regarding claims 9,16, the modified Manson system discloses all the claimed limitations as discussed in claims 1, 10 above; however, fails to disclose said support including adding a heteropolyacid selected from  $H_3PW_{12}O_{40}$  and  $H_4SiW_{12}O_{40}$ .

Yoshimoto teaches that it is conventional in the art, to utilize an oxidation catalyst which includes  $TiO_2$ ,  $WO_3$ , with the addition of a heteropolyacid (see abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the composition of an oxidation catalyst as taught by Yoshimoto in the modified Manson system, since the use thereof would have improved the performance of the oxidizing catalyst.

***Claims 12-14, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manson (US Patent 6,248,689) in view of Kim (US Patent Application***

***Publication US 2003/0104932) as applied to claim 10 above, and further in view of Cooper et al. (US patent 4,902,487) and design choice.***

Regarding claims 12-14, the modified Manson system discloses all the claimed limitations as discussed in claim 10 above, however, fails to disclose that said oxidation catalyst is pretreated at 500-600°C in a gas mixture containing 500 ppm NO, 3% volume O<sub>2</sub> and balance N<sub>2</sub>. Cooper teaches that it is conventional in the art, to pretreat said oxidation catalyst in a gas mixture containing 400 ppm NO, 12% volume O<sub>2</sub> and balance N<sub>2</sub> prior to positioning said catalyst in said exhaust stream (see col. 5, lines 1+).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have pretreated said oxidation catalyst in a gas mixture as taught by Cooper in the modified Manson system, for more efficiently improved the catalyst performance.

Regarding to the exact composition of the mixture gas and temperature range for pretreating the catalyst, it is the examiner's position that the gas mixture containing 500 ppm NO, 3% volume O<sub>2</sub> and balance N<sub>2</sub> and temperature range about 500-600°C would have been an obvious matter of design choice well within the level of ordinary skill in the art, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

***Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Twigg et al. (US Patent 6,294,141) in view of Deeba et al. (US Patent 6,375,910).***



Twigg discloses a diesel exhaust gas treatment system comprising:

a first oxidation catalyst (2) for converting at least a portion of NO contained in said diesel exhaust gas to NO<sub>2</sub>; said oxidation catalyst comprising platinum (see abstract; see col. 1, lines 61-65); a second oxidation catalyst (3) different from said first oxidation catalyst (see abstract); wherein said first and second oxidation catalyst are positioned in combination in the exhaust gas passage of a diesel engine (see Figure 1); however, fails to disclose said first oxidation catalyst having a support material comprising zirconia /silica and converting of NO to NO<sub>2</sub> at a temperature between about 175°C to 250°C. Deeba teaches that it is conventional in the art, to utilize an oxidation catalyst comprising platinum on a support material being zirconia-silica and having conversion at a temperature between about 79°C to 204°C (see col. 3, lines 8-17).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the first oxidation catalyst comprising the support material being zirconia-silica and having conversion temperature range, as taught by Deeba, since the use thereof is notoriously well -known in the art as a support structure for catalysts.

***Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Manson (US Patent 6,248,689) in view of Kim (US Patent Application Publication US 2003/0104932).***

Kim discloses a diesel exhaust gas treatment system comprising:

an oxidation catalyst for purification of exhaust gas, said oxidation catalyst comprising platinum and a support material comprising zirconia-silica (see page 2, part

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[0023]-[0025], page 3, part [0031]); however, fails to disclose said oxidation catalyst converting at least a portion of NO contained in said exhaust gas to NO<sub>2</sub> and having a pKa of between about 5 to 13.

One having ordinary skill in the art would realize that any oxidation catalyst would oxidize the NO to the NO<sub>2</sub>, and the support material zirconia –silica having at least one solid acid and a strong acid carried on (see page 2, part [0026]); therefore, the catalyst having a high pKa value, is notoriously well known in the art so as to be proper for official notice.

***Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Manson (US Patent 6,248,689) in view of Kim (US Patent Application Publication US 2003/0104932).***

Regarding claim 29, the modified Manson system discloses all the claimed limitations as discussed in claim 1 above, however, fails to disclose that said zirconia-silica support has been formed by impregnating silica gel with a zirconium citrate ammonium complex, drying said support, and calcinating said support at 800oC.

However, where a product by process claim is rejected over a prior art product that appears to be identical, although produced by a different process, the burden is upon the applicants to come forward with evidence establishing an unobvious difference between the two. See *In re Marosi*, 218 USPQ 289 (Fed. Cir. 1983)

### ***Response to Arguments***

Applicant's arguments filed on 10/28/03 have been considered but are moot in view of the new ground(s) of rejection.

### **Conclusion**

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Any inquiry concerning this communication from the examiner should be directed to Examiner Diem Tran whose telephone number is (703) 308-6073. The examiner can normally be reached on Monday -Friday from 8:30 a.m. - 5:00p.m.

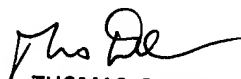
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reached on (703) 308-2623. The fax number for this group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0861.

DT  
January 9, 2004



Diem Tran  
Patent Examiner  
Art unit 3748



THOMAS DENION  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3700